

Visual Demands Associated with Aviation Maintenance Inspection

Gregory Good¹, Jason Nichols¹, Manoj Subbaram¹, Van Nakagawara²,
Ronald Montgomery²

¹The Ohio State University College of Optometry, Columbus, OH

²CAMI, FAA, Oklahoma City, OK

Introduction: Aircraft maintenance inspectors spend many hours searching for small defects in aircraft. The failure to visually-detect cracks has been linked to several catastrophic events. While vision guidelines exist for specialty inspector personnel, none exist for visual inspectors. Before job-relevant vision guidelines can be developed for this occupation, a detailed visual task analysis is required. This study is a descriptive investigation of the visual tasks of aviation visual inspectors. **Methods:** Visual inspectors at five aircraft maintenance facilities were observed performing inspections on commercial aircraft. At precisely timed intervals, the visual work performed by these inspectors was recorded along with the viewing direction and fixation distance. These values were summed and compared across specific job tasks and inspection locations on the aircraft. **Results:** The majority of aircraft inspection work accomplished by visual inspectors was performed at working distances of 50 cm or less, while intermediate values (>50 cm to 1 m) comprised approximately 20% of the working distances. Fixation distances longer than one meter were found more rarely. Additionally, approximately 30% of nearpoint visual inspection was accomplished while gazing above eye level. The mean age of inspectors was 45.1 years. **Conclusions:** The primary duty of visual inspectors is the identification of defects in aircraft when viewed at near and intermediate distances. Data from this study support the need for both nearpoint and intermediate visual acuity standards and specially-designed eyewear to provide clear vision at nearpoint both below and above eye level.

Funded by the Federal Aviation Administration.